

REMARKS

The Office Action dated June 15, 2005 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response to the Office Action.

Applicants respectfully requests acknowledgement of the references that were submitted with the Information Disclosure Statement filed on July 2, 2004. A copy of the IDS and PTO 1449 are enclosed for the Examiner's convenience.

Claims 1 and 28-32 are amended to particularly point out and distinctly claim the subject matter of the present invention. Support for these amendments is found at least on page 9, first paragraph, of the specification. Applicants gratefully acknowledge the indication that claims 15, 16, 26 and 27 would be allowable if rewritten into independent form. Accordingly, claims 15, 16, 26 and 27 are amended to independent form, incorporating the base and intervening claims and are therefore allowable. New claims 33 and 34 are added and claim 3 is cancelled without prejudice. No new matter is added. Claims 1, 2, 4-14, 17-25 and 28-34 are respectfully submitted for consideration.

The Office Action rejected claims 1, 2, 4, 11, 12, 13, 14, 21, 22, 23, 24 and 30 under 35 U.S.C. 102(b) as being anticipated by U.S. patent No. 6,018,312 to Haworth (Haworth). Applicants submit that Haworth fails to disclose or suggest all of the features of any of the pending claims.

Claim 1, from which claims 1, 2, 4-14, and 17-25 depend, recites a telecommunications system. The telecommunications system includes a first transmitter

unit situated at a first, known location and a second transmitter unit situated at a second, unknown location. The telecommunications system further includes a first receiving unit at a third, known location arranged to receive signals from the first and second transmitter units; and further arranged to determine the time difference between the arrival times of a signal from the first transmitter unit and a signal from the second transmitter unit, and a second receiving unit at a fourth, known location arranged to receive signals from the first and second transmitter units, and further arranged to determine the time difference between the arrival time of a signal from the first transmitter unit and a signal from the second transmitter unit. In the telecommunications system, the said signals received time differences determined by the first and second receiving units are usable to ascertain the location of the second transmitter unit.

Claim 30 recites a method of determining the location of a transmitter unit in a telecommunications system. The method includes receiving signals at a first receiving unit situated at a first, known location from a first transmitter unit situated at a second, known location and from a second transmitter unit situated at a third, unknown location, and determining the time difference between the arrival times of a signal from the first transmitter unit and a signal from the second transmitter unit. The method further includes receiving signals at a second receiving unit situated at a fourth, known location from the said first transmitter unit and from the said second transmitter unit, and determining the time difference between the arrival times of a signal from the first

transmitter unit and a signal from the second transmitter unit, and using the time differences determined to ascertain the location of the second transmitter unit.

Haworth relates to a method for locating an unknown transmitter in a satellite communication system by relaying signals received from the unknown transmitter and a reference transmitter via two separate communications satellites. The position of the unknown transmitter is determined by calculation of the Differential Time Offset (DTO) and Differential Frequency Offset (DFO) of the received signals. In particular, Haworth defines DTO as the differential time offset, or the time delay between receipt of two replicas of an originally identical signal after reception via different routes. Thus, Haworth uses the time difference between the arrival times of the same signal at the first and second receivers in order to locate the unknown transmitter.

Applicants submit that Haworth fails to disclose or suggest at least the feature of the first and second receiver units arranged to determine a time difference between the arrival times of a signal from the first transmitter unit and a signal from the second transmitter unit and using the determined time difference to determine the position of the second transmitter unit, as recited in claim 1 and similarly recited in claim 30. Further, on page 5, the Office Action admits that Haworth fails to disclose this feature.

Applicants submit that because claims 2, 4, 11, 12, 13, 14, 21, 22, 23, 24 depend from claim 1, these claims are allowable at least for the same reasons as claim 1.

Based at least on the above, Applicants submit that Haworth fails to disclose or suggest all of the features of any of the pending claims. Accordingly, withdrawal of the

rejection of claims 1, 2, 4, 11, 12, 13, 14, 21, 22, 23, 24 and 30 under 35 U.S.C. §102(b) is respectfully requested.

The Office Action rejected claims 3, 5, 7 and 8 under 35 U.S.C. §103(a) as being unpatentable over Haworth in view of US Patent No 5,008,679 to Effland (Effland). The Office Action took the position that Haworth disclosed all of the features of these claims except the features of using signals received from the transmitting units to determine a time difference between the arrival times of a signals received from the first and second transmitter units (cancelled claim 3), the feature of using the pair of signals received by the receiver units to calculate a range of possible locations of the second transmitter unit (claims 5 and 7), the feature that the different ranges of possible locations substantially coincide at a single common location that is substantially the location of the second transmitter unit (claim 8), and any given location of the first and second receiving units, the pair of signals received by the first receiving unit is a different pair of signals from the pair of signals received by the second receiving unit (claim 10). The Office Action asserts that Effland discloses these features.

Applicants submit that the cited references taken individually or in combination fail to disclose or suggest all of the features of the pending claims. The rejection of claim 3 is moot in light of the cancellation of claim 3. Haworth is discussed above.

Effland relates to a method and system for locating an unknown transmitter. Effland discloses receiving a signal originating from transmitter 10 and retransmitted by satellite 15 to receiving station 25 is delayed by a first path length equal to a distance

between transmitter 10 and satellite 15 and by a path length equal to a distance between satellite 15 and receiving station 25 and the signal originating from transmitter 10 and retransmitted from satellite 20 to receiving station 25 is delayed by a first path length equal to the distance between transmitter 10 and satellite 20, and by a second path length equal to a distance between satellite 20 and receiving station 25. The detection of relative delay (TDOA) is used to determine isodelays which is used to determine the location of the transmitter (see Effland column 4 lines 6-11 and 39-49).

Applicants submit that Haworth is deficient as admitted in the Office Action and Effland fails to make up for these deficiencies. As discussed above, the above mentioned claims recite that there are two receiver units that each receive signals from the two transmitters and a time difference is determined in both receiving units and both determined time differences are used to determine the location of the second transmitter unit. However, Effland at best, discloses one receiver 25 that receives signals from two satellites that originated from a transmitter (see Figure 1 of Effland). The signals received by the single receiver 25 are ultimately used to determine the location of the second transmitter. Thus, Effland fails to make up for the deficiencies of Haworth.

Based at least on the above, Applicants submit that the cited references taken individually or in combination fail to disclose or suggest all of the features of the pending claims. Accordingly, withdrawal of the rejection of claims 5, 7, 8 and 10 under 35 U.S.C. §103(a) is respectfully requested.

The Office Action rejected claims 6, 19, 28, 29, 31 and 32 under 35 U.S.C. §103(a) as being unpatentable over Haworth, in view of US Publication No. 2003/0125046 to Riley et al. (Riley). The Office Action took the position that Haworth disclosed all of the features of these claims except the features of the possible locations of the transmitter is in the form of a hyperbola running through substantially the location of the second transmitter (claim 6) and the feature that the first and second transmitters are cellular stations (claim 19), the first and second transmitters are base stations (claims 28, 29, 31 and 32). Applicants submit that the cited references taken individually or in combination, fail to disclose or suggest all of the features of any of the pending claims.

Specifically, regarding claims 6 and 19, Applicants submit that Haworth is deficient at least for the reasons regarding claim 1 set forth above, and Riley fails to make up for these deficiencies. Regarding claims 28, 29, 31 and 32, Applicants submit that Riley fails to make up for the deficiencies of the Haworth. Haworth is discussed above.

Claim 28 recites a telecommunications system that includes a first transmitter unit situated at a first, known location, and a second transmitter unit situated at a second, fixed, unknown location. The telecommunications system further includes a first receiving unit at a third, known location arranged to receive signals from the first and second transmitter units; and further arranged to determine the time difference between the arrival times of a signal from the first transmitter unit and a signal from the second transmitter unit, a second receiving unit at a fourth, known location arranged to receive signals from the first and second transmitter units, and further arranged to determine the

time difference between the arrival times of a signal from the first transmitter unit and a signal from the second transmitter unit. In the telecommunications system the time differences determined by the first and second receiving units are usable to ascertain the location of the second transmitter unit.

Claims 29 recites a telecommunications system that includes a first base station situated at a first, known location, and a second base station situated at a second, unknown location. The telecommunications system further includes a first mobile station at a third, known location arranged to receive signals from the first and second base stations; and further arranged to determine the time difference between the arrival times of a signal from the first transmitter unit and a signal from the second transmitter unit; and a second mobile station at a fourth, known location arranged to receive signals from the first and second base stations, and further arranged to determine the time difference between the arrival times of a signal from the first transmitter unit and a signal from the second transmitter unit. In the telecommunications system, the time differences are determined by the first and second mobile stations are usable to ascertain the location of the second base station.

Claim 31 recites a method of determining the location of a transmitter unit in a telecommunications system. The method includes receiving signals at a first receiving unit situated at a first, known location from a first transmitter unit situated at a second, known location and from a second transmitter unit situated at a third, fixed, unknown location and determining the time difference between the arrival times of a signal from

the first transmitter unit and a signal from the second transmitter unit, and receiving signals at a second receiving unit situated at a fourth, known location from the said first transmitter unit and from the said second transmitter unit. The method further includes determining the time difference between the arrival times of a signal from the first transmitter unit and a signal from the second transmitter unit, and using the time differences determined to ascertain the location of the second transmitter unit.

Claim 32 recites a method of determining the location of a base station in a telecommunications system. The method includes receiving signals at a first mobile station situated at a first, known location from a first base station situated at a second, known location and from a second base station situated at a third, unknown location and determining the time difference between the arrival times of a signal from the first transmitter unit and a signal from the second transmitter unit. The method further includes receiving signals at a second mobile station situated at a fourth, known location from the said first base station and from the said second base station. The method further includes determining the time difference between the arrival times of a signal from the first transmitter unit and a signal from the second transmitter unit; and using the time differences determined to ascertain the location of the second base station.

The Office Action on page 3, admits that Haworth fails to disclose or suggest the feature of using signals received from the transmitting units to determine a time difference between the arrival times of a signals received from the first and second transmitter units. Riley fails to make up for these deficiencies.

Riley is directed to a method of locating a base station in a mobile communication system using signals transmitted between the base station and mobile stations of a known location. Riley does mention the use of a base station in a known location to be used as a references transmitter and that each mobile station is arranged to determine the time difference between the arrival times of a signal from the first transmitter unit and a signal from the second transmitter unit and using the determined time differences to ascertain the position of the second transmitter unit, as recited in claims 28, 29, 31 and 32. Thus, Riley does not make up for the admitted deficiencies of Haworth.

Based at least on the above, Applicants submit that the cited references taken individually or in combination, fail to disclose or suggest all of the features of claims 6, 19, 28, 29, 31 and 32. Accordingly, withdrawal of the rejection of claims 6, 19, 28, 29, 31 and 32 under 35 U.S.C. §103(a) is respectfully requested.

The Office Action rejected claim 12 under 35 U.S.C. §103(a) as being obvious over Haworth in view of US Patent No. 6, 661,998 to Hunzinger et al.(Hunzinger). The Office Action took the position that Haworth disclosed all of the features of claim 12 except the feature of signals received by the receiving units are received in response to signals sent to the first and second transmitter units by the first and second receiving

units. The Office Action asserts that Hunzinger discloses this feature. Applicants submit that the cited references taken individually or in combination fails to disclose or suggest all of the features of any of the pending claims. Specifically, because claim 12 depends from claim 1, claim 12 is allowable at least for the same reasons as claim 1. Haworth is discussed above.

Hunzinger is directed to a method of mobile station to base station communication and signal acknowledgement. Applicants submit that because claim 21 depends from claim 1 and because Hunzinger fails to even mention the feature of the first and second receiver units arranged to determine a time difference between the arrival times of a signal from the first transmitter unit and a signal from the second transmitter unit and using the determined time difference to determine the position of the second transmitter unit as recited in claim 1, Hunzinger fails to make up for the deficiencies of Haworth. Thus, the cited references taken individually or in combination, fails to disclose or suggest all of the features of claim 12.

Withdrawal of the rejection of claim 12 under 35 U.S.C. §103(a) is respectfully requested.

The Office Action rejected claims 17, 18, 20 and 25 under 35 U.S.C. §103(a) as being obvious over Haworth in view of US Patent No. 6, 611, 788 to Hussa (Hussa). The Office Action took the position that Haworth disclosed all of the features of these claims except the features of a cell phone (claim 17), Enhanced Observed Time Difference (E-OTD) and Global Positioning System (GPS) location method, or Observed Time

Difference of Arrival (OTDOA) and GPS location method. The Office Action asserted that Husa disclosed this feature. Applicants submit that the cited references taken individually or in combination, fails to disclose or suggest all of the features of these claims. Applicants submit that because claims 17, 18 20 and 25 depend from claim 1, Haworth is deficient at least for the same reasons as claim 1 and Husa fails to make up for these deficiencies.

Husa is directed to an apparatus and method for measuring and recording movement of a mobile station using a mobile network. Husa does not mention the feature of the first and second receiver units arranged to determine a time difference between the arrival times of a signal from the first transmitter unit and a signal from the second transmitter unit and using the determined time difference to determine the position of the second transmitter unit. Thus, Husa does not cure the deficiencies of Haworth.

Based at least on the above, Applicants submit that the cited references taken individually or in combination fail to disclose or suggest all of the features of claims 17, 18, 20 and 25. Accordingly, withdrawal of the rejection of these claims under 35 U.S.C. §103(a) is respectfully requested.

The Office Action objected to claims 15, 16, 26 and 27 as being dependent from a rejected base claim, but indicated that these claims would be allowable if rewritten into independent form. Accordingly, because claims 15, 26 and 27 are rewritten into

independent form and claim 16 depends from claim 15, these claims are allowable.

Withdrawal of the objection to claims 15, 16, 26 and 27 is respectfully requested.

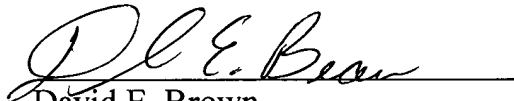
New claims 33 and 34 are added. Applicants respectfully submit that these claims recite features that are neither disclosed nor suggested in any of the cited references. Accordingly, claims 33 and 34 are allowable.

Applicants submit that each of claims 1, 2, and 4-34 recite features that are neither disclosed or suggested in any of the cited references. Accordingly, Applicants request that these claims be allowed and this application pass to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,


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